

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,841,134 B2
DATED : January 11, 2005
INVENTOR(S) : Hanus et al.

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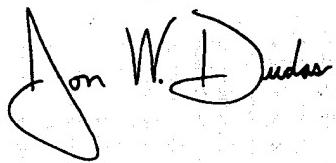
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Delete Title page illustrating figure, and substitute therefor, new Title page illustrating figure (attached).

Delete drawing sheets 1-9, and substitute therefor, drawing sheets 1-9, with the attached sheets.

Signed and Sealed this

Twentieth Day of December, 2005



JON W. DUDAS
Director of the United States Patent and Trademark Office

(12) United States Patent
Hanus et al.

(10) Patent No.: US 6,841,134 B2
(45) Date of Patent: Jan. 11, 2005

(54) ELECTRICALLY-HEATED CHEMICAL PROCESS REACTOR

6,214,296 B1 • 4/2001 Lou et al. 422/148

(75) Inventors: Gary J. Hanus, Edina, MN (US);
Stuart J. Olstad, Maple Grove, MN (US)

OTHER PUBLICATIONS

(73) Assignee: Phoenix Solutions Co., Crystal, MN (US)

Olstad et al, "Organic Compound Destruction and Removal Efficiency (DRE) for Plasma Incinerator Off-gases Using an Electrically Heated Secondary Combustion Chamber" 1998 Proceedings on IT3 Conference, May 11, 1998, pp 419-421, Salt Lake City, UT.

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 813 days.

Reed et al, "Electric Heater Development and Performance Data for Mach 14 Wind Tunnel", Journal of Spacecraft and Rockets, vol. 12, No. 5, pp 308-313, May, 1974.
"Phoenix Solutions Co.—Products and Services", sales brochure, Nov., 1998.

(21) Appl. No.: 09/760,081

Background/Qualifications of Phoenix Solutions Co . . . sales brochure, Jul. 15, 1996.

(22) Filed: Jan. 12, 2001

* cited by examiner

(65) Prior Publication Data

Primary Examiner—Kiley S. Stoner

US 2002/0094312 A1 Jul. 18, 2002

Assistant Examiner—Len Tran

(51) Int. Cl. 7 F01N 3/02

(74) Attorney, Agent, or Firm—Nikolai & Mersereau, P.A.; Thomas J. Nikolai

(52) U.S. Cl. 422/174; 422/199; 422/187

(57) ABSTRACT

(58) Field of Search 422/198, 199, 422/187, 173, 174

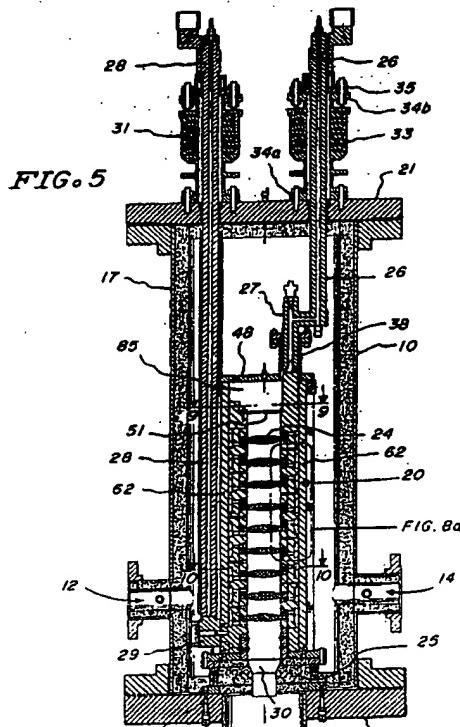
An electrically-heated chemical process reactor having an inlet for receiving industrial gases, an internal channel for passing the flow of gases, and an outlet for expelling the gases. An array of current-carrying screen element packets are arranged along the channel for receiving a heating current, and the internal gas channel includes passages through the array for preheating the gas prior to entering the channel.

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19 Claims, 9 Drawing Sheets

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4,692,306 A • 9/1987 Minet et al	422/49
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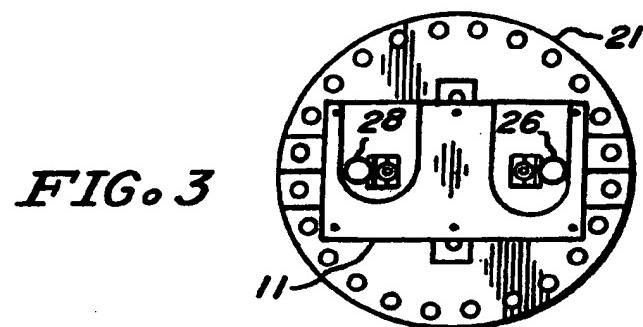
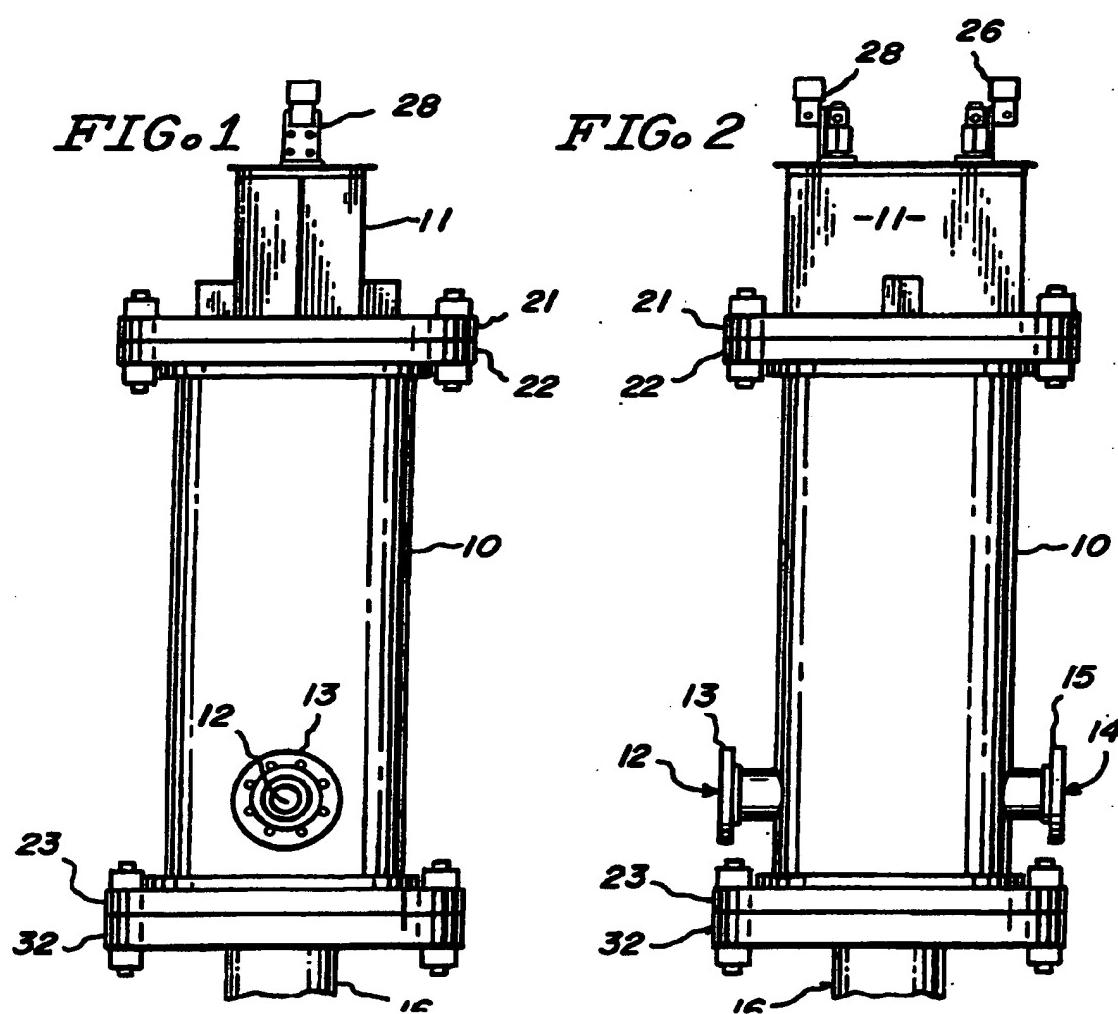


FIG. 3

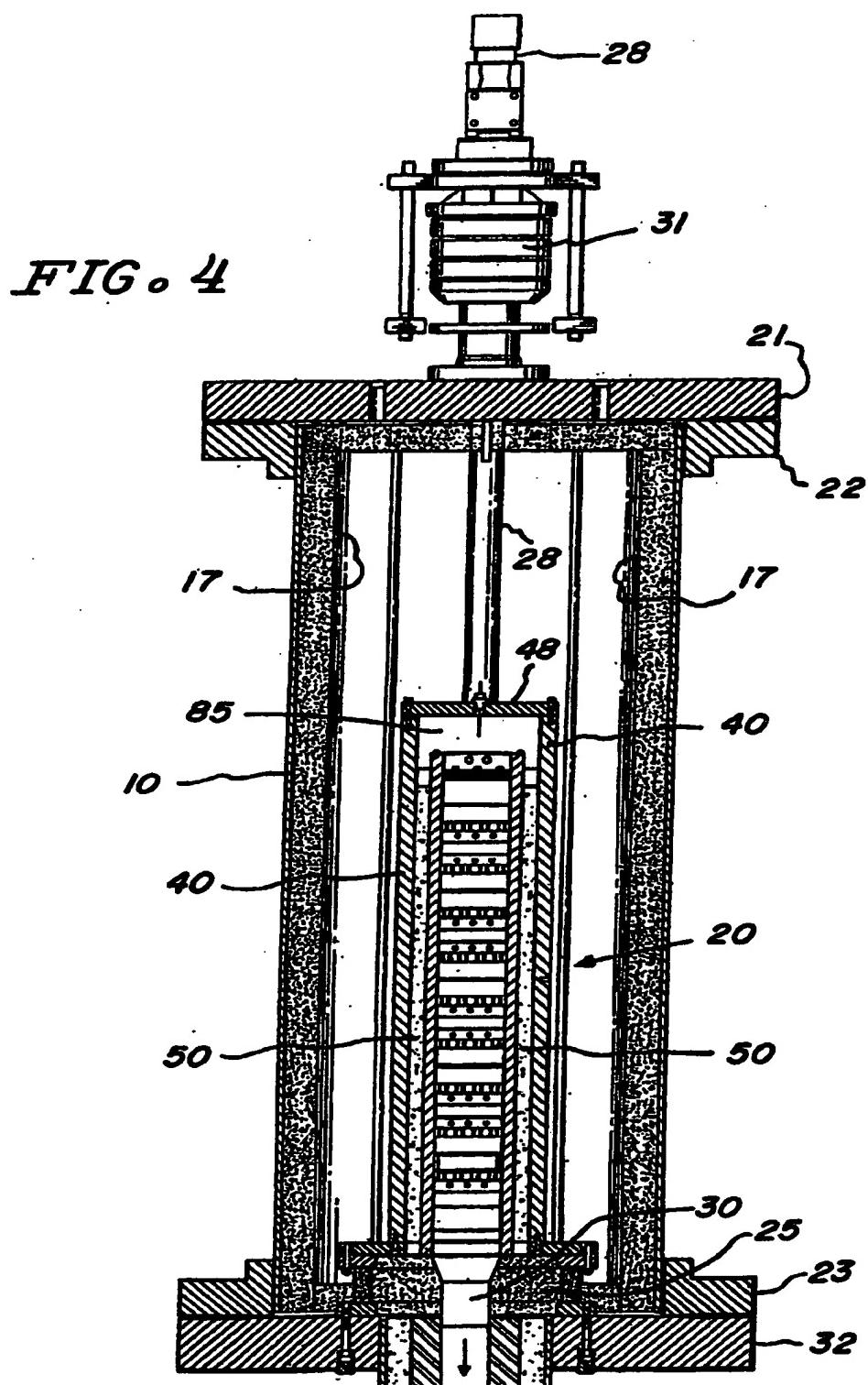


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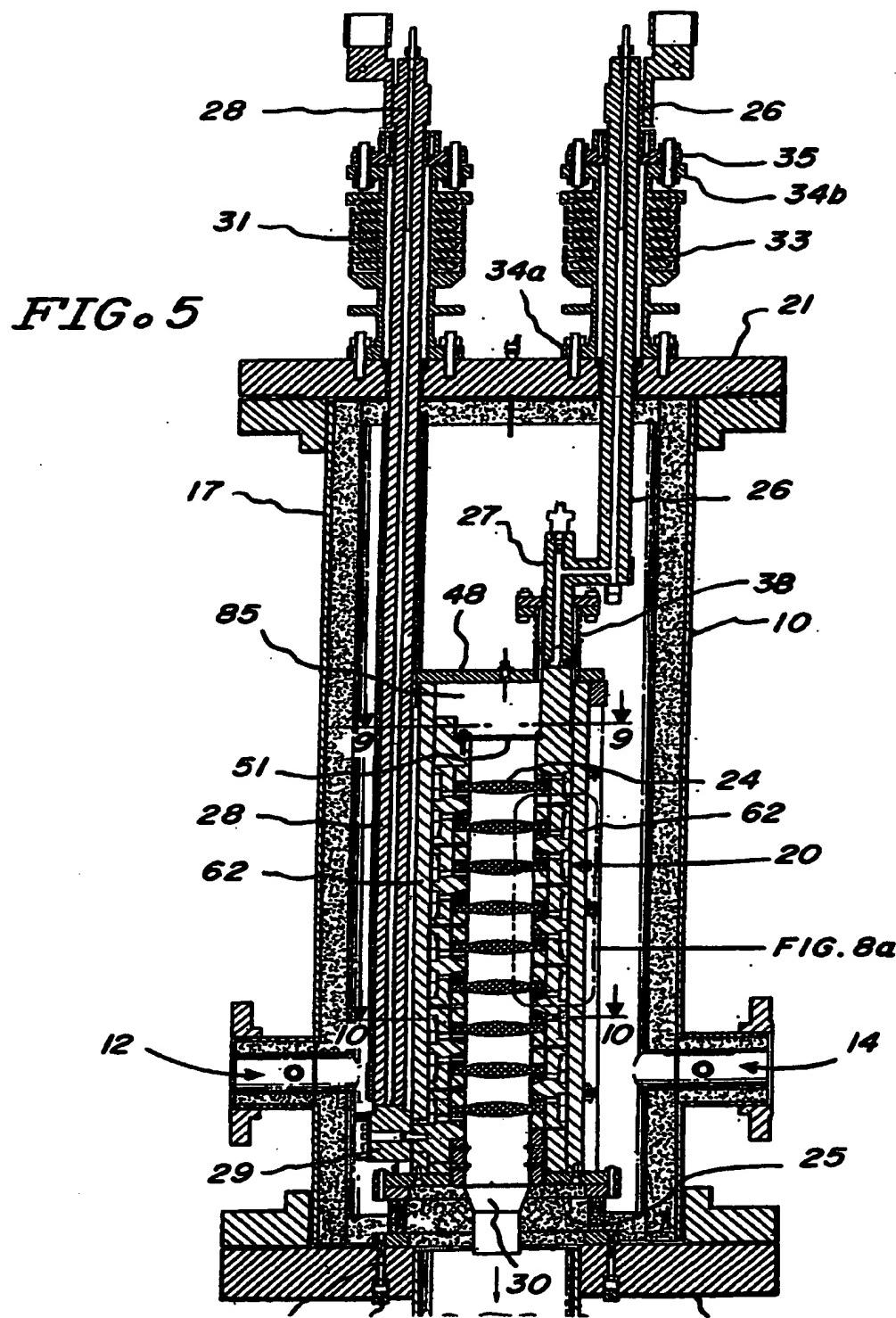


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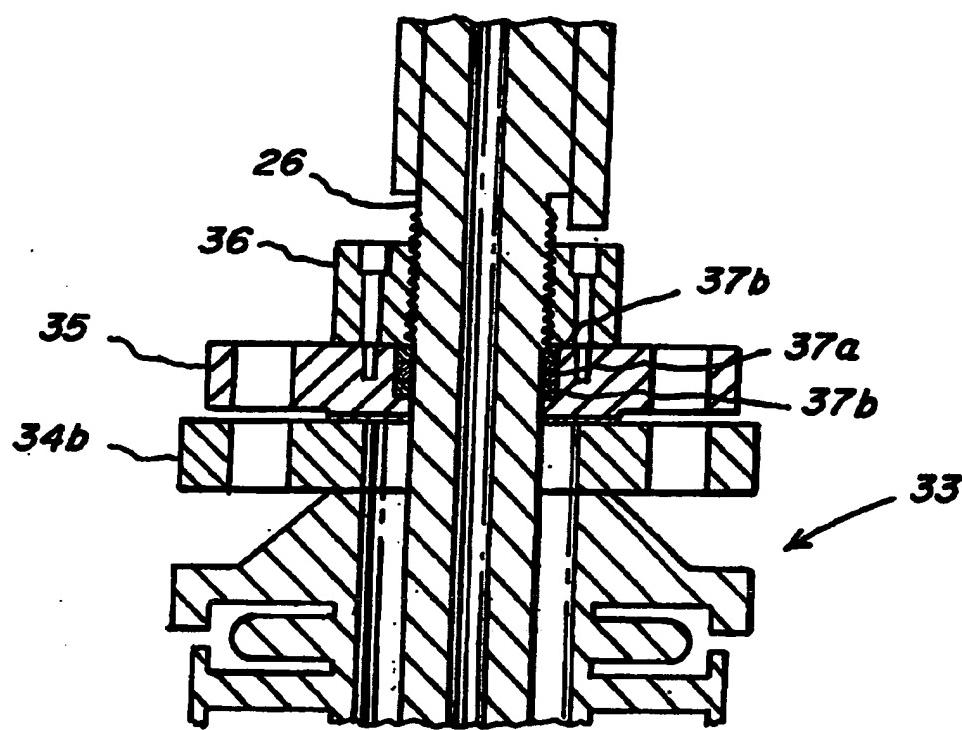


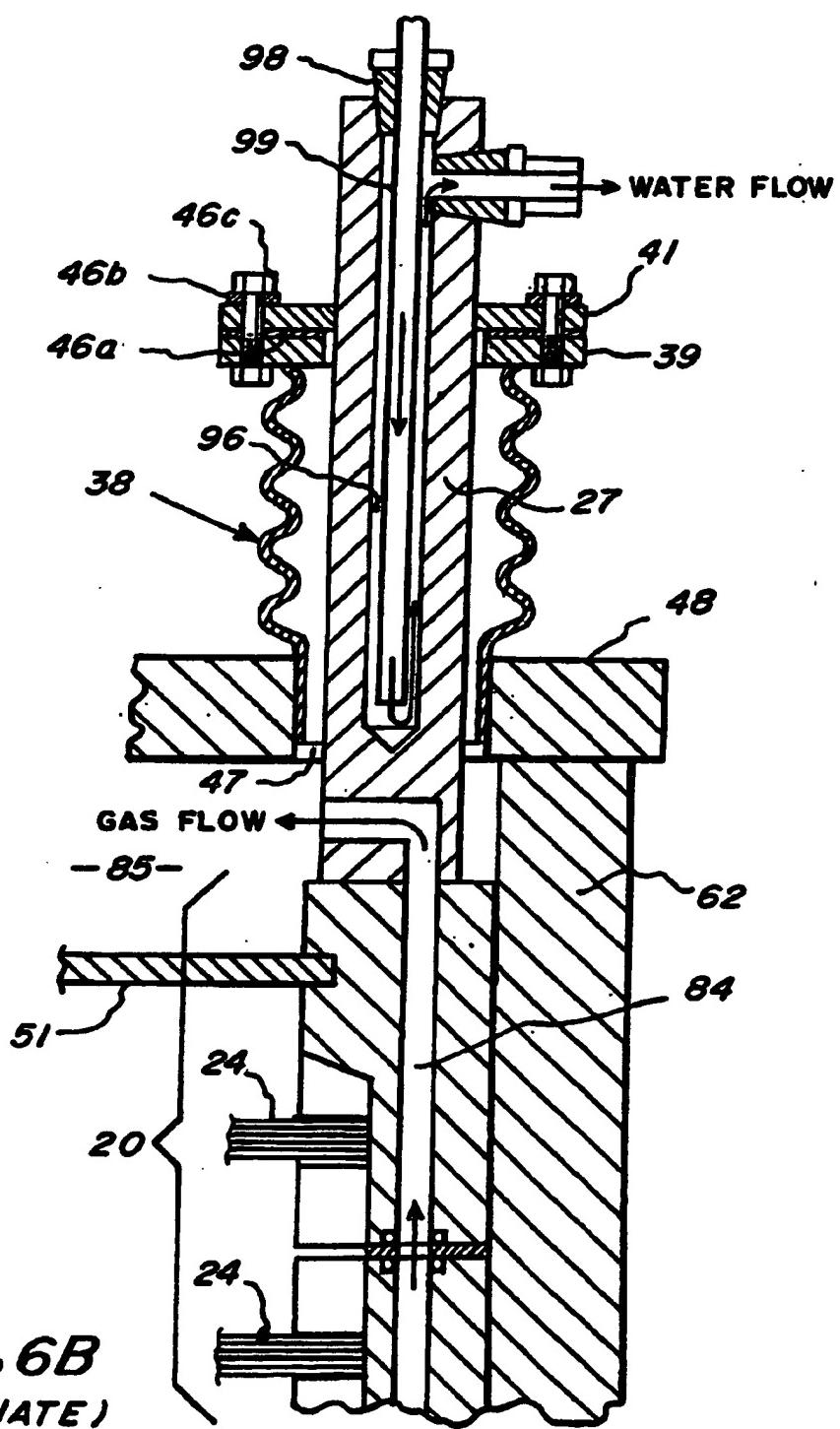
FIG. 6A

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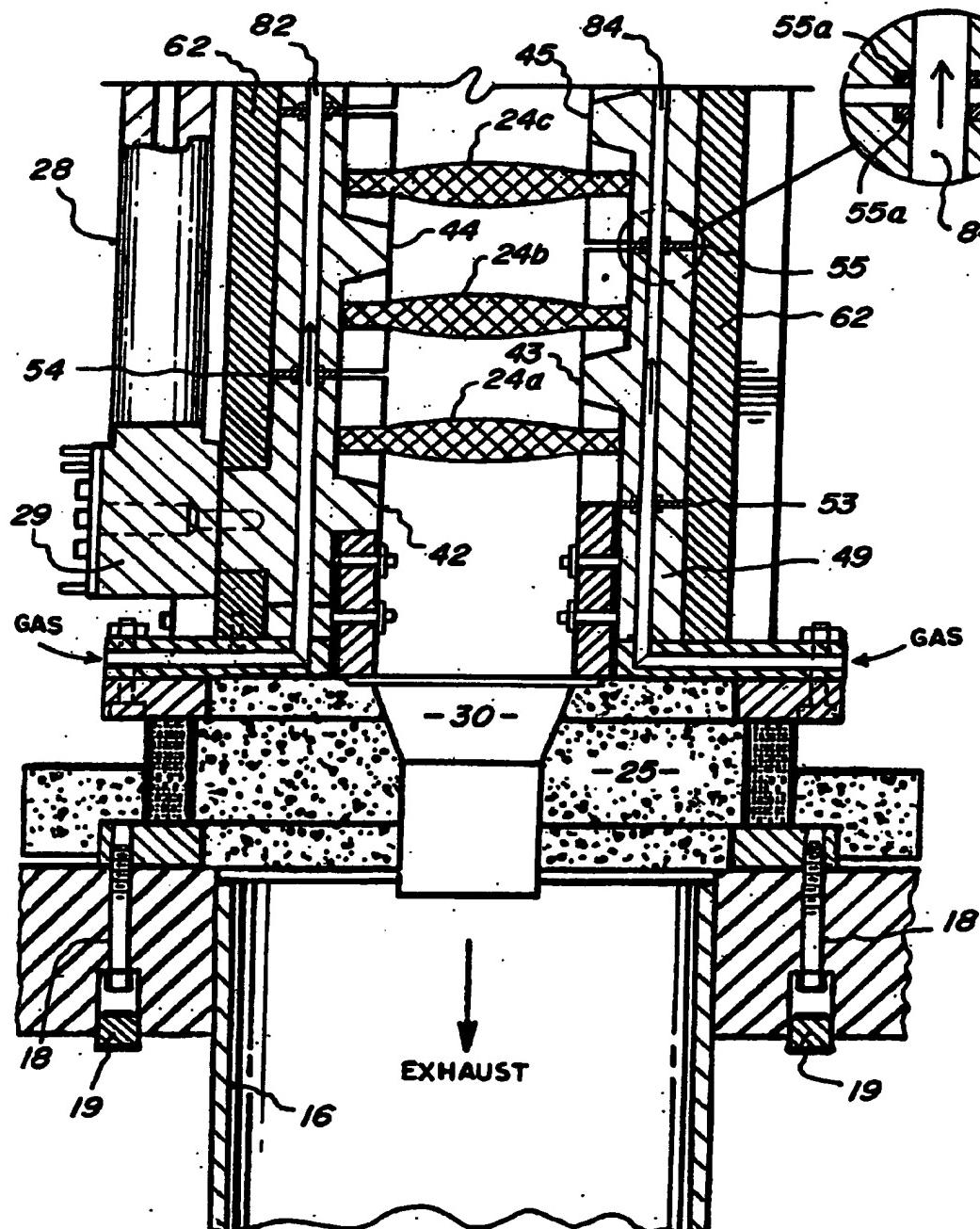
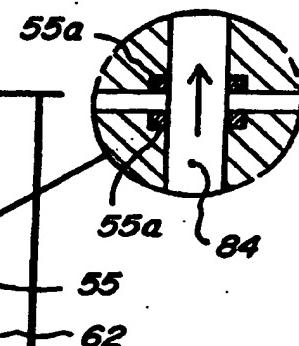
**FIG. 6B
(ALTERNATE)**

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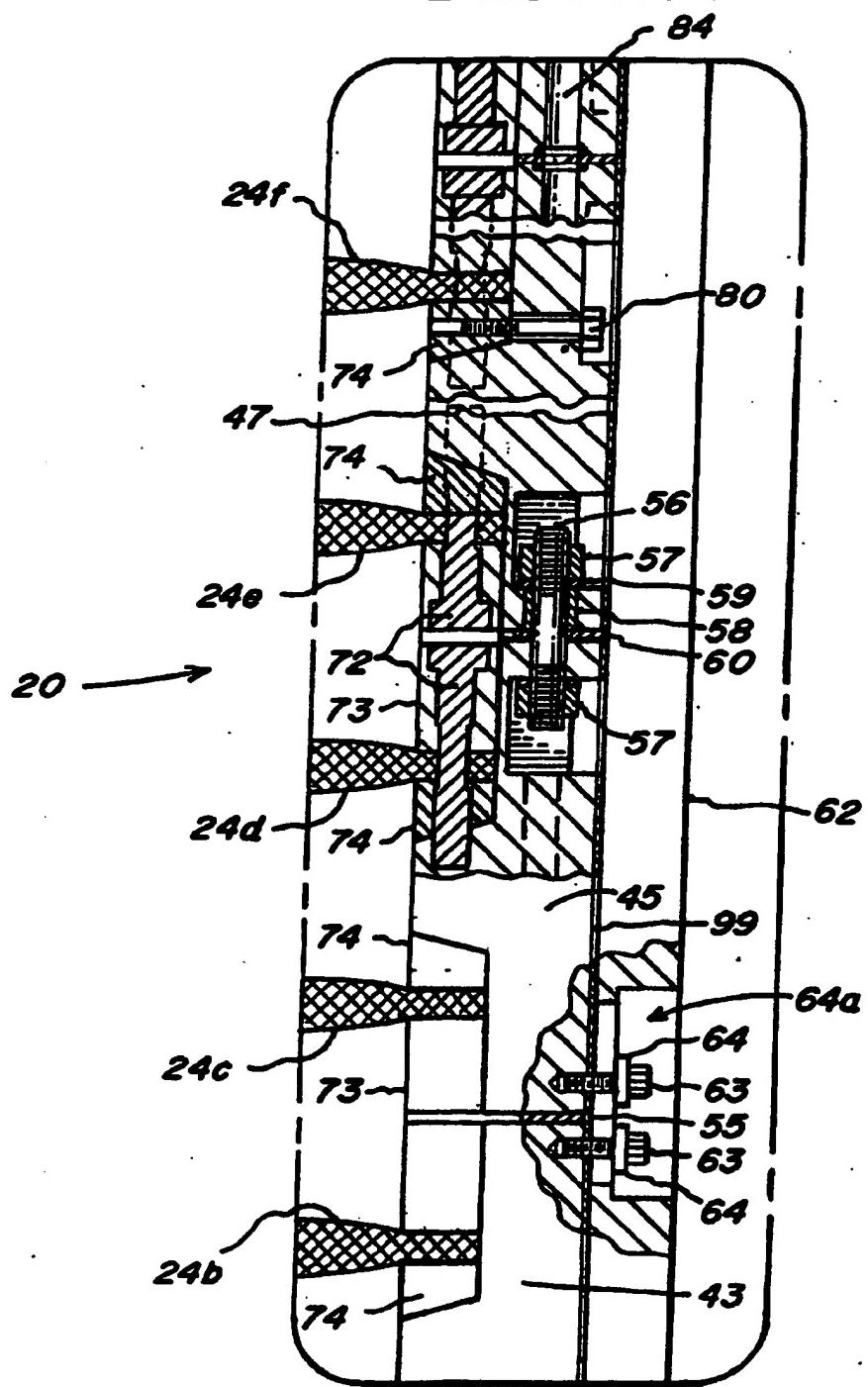
FIG. 7A*FIG. 7B*

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FIG. 8A

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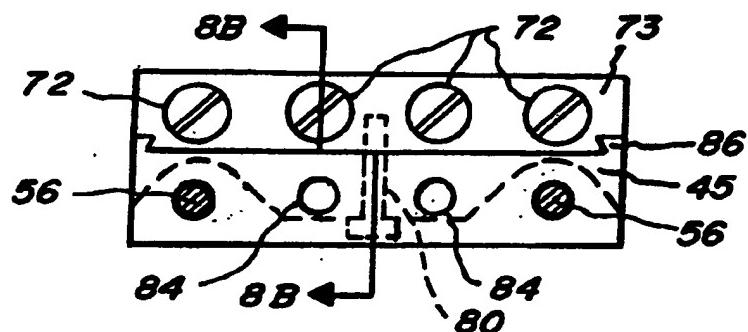


FIG. 8C

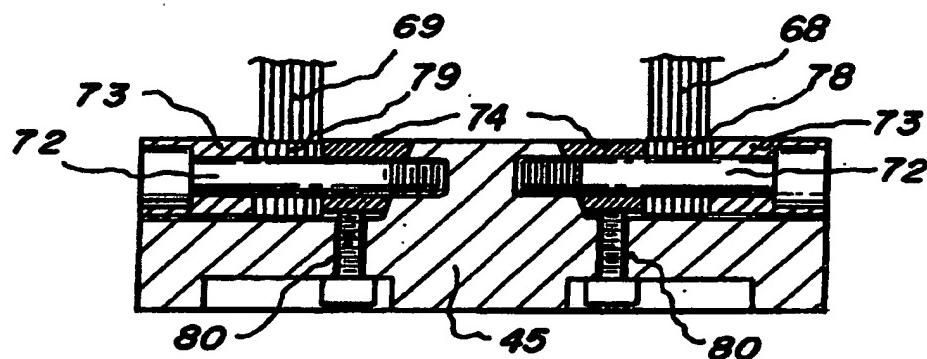
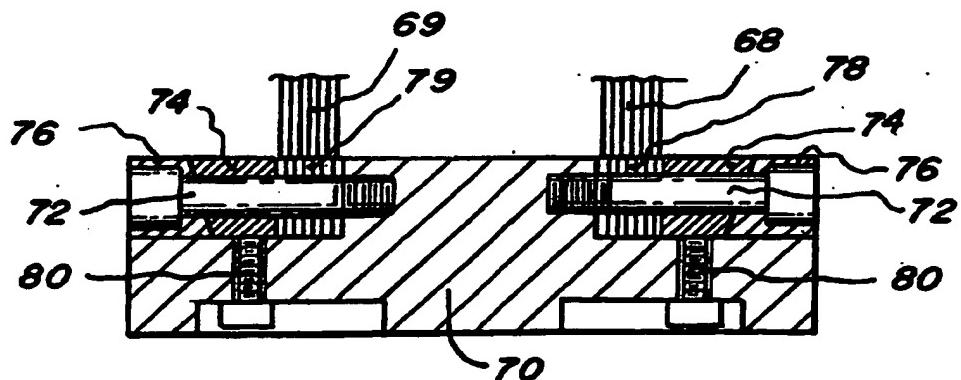


FIG. 8B

FIG. 8D
(ALTERNATE)

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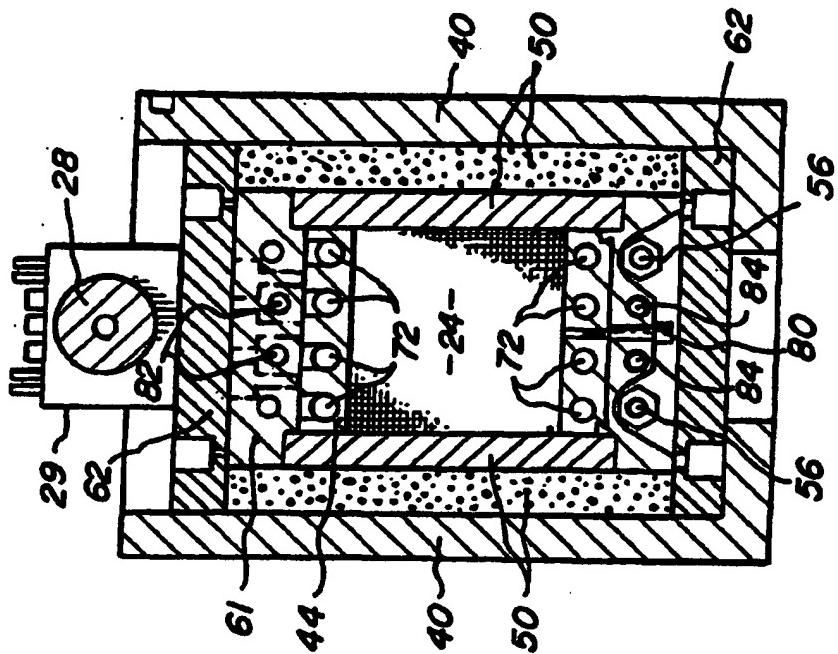


FIG. 10

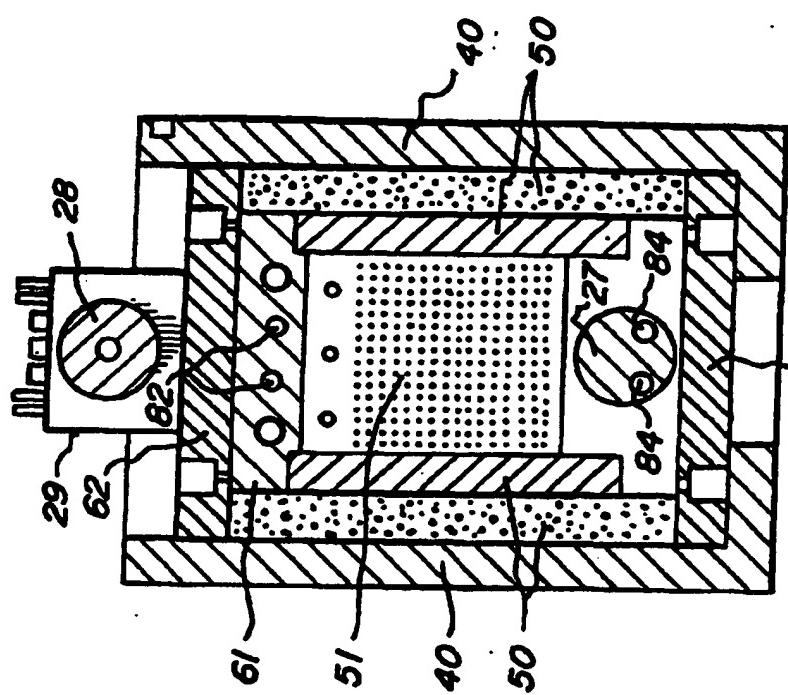


FIG. 9